

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

**(19) World Intellectual Property Organization  
International Bureau**



**(43) International Publication Date  
20 January 2005 (20.01.2005)**

PCT

(10) International Publication Number  
**WO 2005/005866 A1**

**(51) International Patent Classification<sup>7</sup>:**

E16H 57/02

(74) **Agent:** WARREN, Douglas, E.; Polster, Lieder, Woodruff & Lucchesi, L.C., 12412 Powerscourt Drive, Suite 200, St. Louis, MO 63131 (US).

(21) International Application Number:

PCT/US2004/021265

(22) International Filing Date: 30 June 2004 (30.06.2004)

(81) **Désignated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

English

(26) Publication Language: English

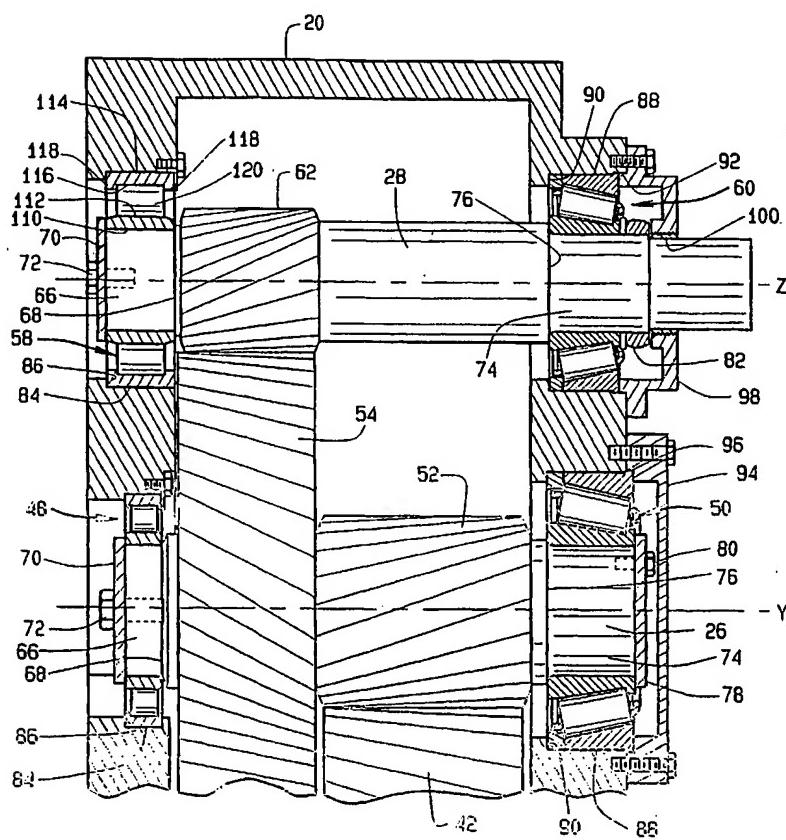
English

(30) Priority Data: 60/484,578 2 July 2003 (02.07.2003) US

**(84) Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

[Continued on next page]

**(54) Title:** TRANSMISSION CONTAINING HELICAL GEARING AND BEARING ARRANGEMENT THEREFOR



**(57) Abstract:** A transmission for a wind turbine includes a housing (20) in which two shafts (26, 28) rotate, each being supported on a locating bearing (50, 60) which transmits thrust loads to the housing as well as radial loads and on a nonlocating bearing (48, 58) which transmits only radial loads to the housing. The shafts carry helical gears (52, 52, 62) which induce thrust loads in the shafts when the shafts transmit torque. The locating bearings are unitized single row tapered roller bearings which are oriented to transmit thrust loads in the primary direction through their raceways (132, 138) and in the secondary direction through ribs (134, 144) at the ends of their rollers (146). The nonlocating bearings take the form of single row cylindrical roller bearings which accommodate differential thermal expansion and contraction between the shafts and housing.



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*